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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/924,542

08/09/2001

Mark C. Sullivan

EYE-102

1986

7590

05/24/2004

Brett C. Martin
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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,542

Applicant(s)

SULLIVAN, MARK C.

Examiner

Kevin M Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This office action, in response to the request for continued examination and amendment filed 5/7/2004, is a non-final office action.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/7/2004 has been entered.
3. Applicant's arguments with respect to claims 6-20 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (US 6,133,871) in view of Abaunza (US 5,271,034)

Regarding claim 9, Krasner discloses a GPS receiver in figure 1A with a GPS antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart of the invention of Krasner. After the portion of the signal is stored 104, an FFT process is initiated 112 and the result is multiplied by a PN code 114. These code sequences belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process is conducted 118 and a peak of the convolution is found 126. Krasner discloses storing segments of information that is used in the process. Krasner does not disclose storing one millisecond segments and converting these one millisecond segments to the frequency domain. Abaunza discloses the "fast Fourier transform 104 examines one millisecond segments of this signal which each comprise 31 samples" column 11, lines 11-15. This information is then arranged into frequency bins. The signal is a global positioning signal (title). It would have been obvious for one of ordinary skill in the art to use the FFT processing the GPS signal as taught in Abaunza in the system of Krasner. The FFT processing of the signal allows for the max power of the signal to be detected correctly (column 1, lines 28-56).

Regarding claim 10, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17).

Regarding claim 11, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Regarding claim 12, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17). This process is the "curve fitting routine".

Regarding claim 13, Krasner further discloses time shifting the signal for "d" seconds, which is equivalent to multiplying the Fourier Transform (column 14, lines 30-46).

5. Claims 6-8 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (US 6,133,871) in view of Abaunza (US 5,271,034) further in view of Halamek et al (US 5,912,558).

Regarding claim 6, Krasner discloses a GPS receiver in figure 1A with a GPS antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart of the invention of Krasner. After the portion of the signal is stored 104, an FFT process is initiated 112, the result is multiplied by a PN code 114. These code sequences belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process is conducted 118 and a peak of the convolution is found 126. Krasner discloses storing segments of information that is used in the process. Krasner does not disclose storing one millisecond segments and converting these one millisecond segments to the frequency domain. Abaunza discloses the "fast Fourier transform 104 examines one millisecond segments of this signal which each comprise 31 samples" column 11, lines 11-15. This information is then arranged into frequency bins. The signal is a global

positioning signal (title). It would have been obvious for one of ordinary skill in the art to use the FFT processing the GPS signal as taught in Abaunza in the system of Krasner. The FFT processing of the signal allows for the max power of the signal to be detected correctly (column 1, lines 28-56). The combination of Krasner and Abaunza does not disclose means for determining the carrier frequency based on the height of the peak. Halamek discloses a CPU performing correlation designed to detect peaks and locating a maximum peak of the correlation estimate and sets the frequency of the radio transmitter to align with the peak which was located (column 4, lines 1-21). This takes place in the receiver. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the means for estimating the carrier frequency of Halamek into the system of the combination of Krasner and Abaunza. This allows all major processing of the signals to take place in the receiver minimizing the dependence on outside components.

Regarding claim 7, Krasner further discloses time shifting the signal for d seconds, which is equivalent to multiplying the Fourier Transform (column 14, lines 30-46).

Regarding claim 8, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Regarding claim 14, Krasner discloses a GPS receiver in figure 1A with a GPS antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart of the invention of Krasner. After the portion of the signal is stored 104, an FFT process

is initiated 112, the result is multiplied by a PN code 114. These code sequences belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process is conducted 118 and a peak of the convolution is found 126. Krasner discloses storing segments of information that is used in the process. Krasner does not disclose storing one millisecond segments and converting these one millisecond segments to the frequency domain. Abaunza discloses the "fast Fourier transform 104 examines one millisecond segments of this signal which each comprise 31 samples" column 11, lines 11-15. This information is then arranged into frequency bins. The signal is a global positioning signal (title). It would have been obvious for one of ordinary skill in the art to use the FFT processing the GPS signal as taught in Abaunza in the system of Krasner. The FFT processing of the signal allows for the max power of the signal to be detected correctly (column 1, lines 28-56). The combination of Krasner and Abaunza does not disclose means for determining the carrier frequency based on the height of the peak. Halamek discloses a CPU performing correlation designed to detect peaks and locating a maximum peak of the correlation estimate and sets the frequency of the radio transmitter to align with the peak which was located (column 4, lines 1-21). This takes place in the receiver. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the means for estimating the carrier frequency of Halamek into the system of the combination of Krasner and Abaunza. This allows all major processing of the signals to take place in the receiver minimizing the dependence on outside components.

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Regarding claims 15 and 17-20, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17).

Regarding claim 16, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Contact Information

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications intended for entry or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.



Kevin M. Burd
PATENT EXAMINER
5/18/2004